



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

**1595 WYNKOOP ST.
DENVER, CO 80202-1129
Phone 800-227-8917
<http://www.epa.gov/region08>**

Subject: POLREP #2 - Progress Pollution Report (Final)
California Gulch NPL – OU 06 – Leadville Mine Drainage Tunnel (LMDT)
Leadville, Lake County, Colorado
Lat:
Long:

To: EPA Headquarters:
John Irizarry
Eugene Lee
EPA Region 8 OCPI: Sonya Pennock

From: Hays Griswold, On Scene Coordinator (OSC)
Curtis Kimbel, R8 Removal Manager
8EPR-ER

Date: 02/27/2008, 1730 hrs MT

Reporting Period: 1600 Hrs MT 2/26/2008 to 1600 Hrs MT 2/27/2008

ABSTRACT

Site #:	0829	Response Authority:	CERCLA
NPL Status:	Listed	Incident Category:	Emergency Removal
CERCLIS ID #:	COD980717938	RCRIS ID#:	
Response Type:	Fund-lead	Contract #:	D.O. #:
Action Memo. Date:	TBD	Start Date:	02/19/2008
Removal Mob. Date:	02/22/2008	Removal Compl. Date:	TBD

1. Introduction

1.1 Background

The Leadville Mine Drainage Tunnel (LMDT) is located in west central Colorado, near the town of Leadville. The US Bureau of Mines constructed the tunnel to provide centralized drainage for portions of the extensive, interconnected mine workings in the Leadville Mining District. The Bureau of Mines contracted LMDT construction during

the periods 1943-1945 and 1950-1952. When construction ceased, the LMDT extended for 11,299 feet from the portal. Ownership of the tunnel transferred to the US Bureau of Reclamation (BOR) in December 1959. Subsequently, BOR constructed a Waste Water Treatment Plant (WWTP) near the LMDT portal to treat the tunnel effluent prior to discharge into the Arkansas River.

Since 1959, several tunnel collapses, trapping water within the tunnel, have been documented. These blockages have resulted in decreased LMDT effluent flow rates, documented differences in water elevations at various points along the tunnel alignment, and rising water levels in the retained 'mine pool'.

According to the BOR, the LMDT currently drains at the rate of approximately 1000-1100 gallons per minute (GPM). The entire volume is directed to the nearby waste water treatment plant where the effluent, containing elevated levels of iron, manganese, zinc, and lead, is effectively treated before discharging to Stray Horse Gulch and the Arkansas River.

1.2 Threat Determination

Due to tunnel blockage, the LMDT is inaccessible beyond station 4+00 (400 feet in from the portal). Beyond station 4+00, the numerous collapses have caused water to back up in the main tunnel as well as the interconnected subterranean network. Accordingly, estimates range from 0.5 to 1.0 billion gallons of water currently impounded behind the various LMDT collapses. All of the impounded water is assumed to be contaminated with metals leached from the surrounding mineralized zone(s).

Due to continuing LMDT structural deterioration, the gradually-increasing hydrostatic head on water retained behind the collapses, and the increasing volume of water retained in the LMDT, there exists a potential for catastrophic release of contaminated water (a 'blowout') through the portal. In addition, newly-discovered surface seeps in the area, at elevations above the portal, indicate a rise in water level behind the plugs. The existing WWTP is incapable of treating effluent volumes anticipated during a blowout.

Private residential units have been established between the LMDT portal and the confluence with the Arkansas River. Such residential units could be directly impacted by LMDT effluent during a blowout event.

2. Current Activities

2.1 Operations

The GAW Shaft, about a mile away from the LMDT, drains via artesian flow,

uncontaminated water from mine workings near, and at a higher elevation, than those connected to the LMDT. In an attempt to relieve some fraction of hydrostatic head being placed on the underground water retained by the LMDT plugs, water will be pumped from the GAW Shaft and discharged to California Gulch (Cal Gulch), a drainage leading to the Arkansas River. GAW Shaft pumping should also reduce the volume of contaminated water being released to the environment via some of the recently-discovered surface seeps above the LMDT portal. GAW effluent water quality, currently acceptable for direct release, will be continuously monitored.

On Wednesday, February 27, 2008 at 11:00 AM an interim pump was installed in the GAW shaft and pumping operations initiated to pump approximately 150-200 GPM from the GAW Shaft into nearby Cal Gulch.

A larger, custom fabricated pump capable of pumping 500-800 GPM and designed specifically for pumping from the GAW Shaft, was built in Kansas City, MO and is in transit to Colorado. The pump, along with 400 feet of specially designed pipe, complete with quick-disconnect fittings to allow variations in pumping depth, is scheduled to arrive in Leadville, CO on Monday, March 3, 2008. Installation will begin immediately thereafter. An electrician to hook up power and the required meter is scheduled to begin work on the site on Monday, March 3rd as well.

Water samples collected from the site on Friday, 22, February have been sent to the lab with instructions to expedite turn around time. Note: Previous water quality samples taken from the Cal Gulch area revealed water quality levels to meet Class 1 Cold Water Aquatic Standards.

Lake County Colorado snow removal personnel have expressed willingness to begin plowing access roads required to start work on the well and piping at the LMDT near location 46-06. The county estimates the time required to provide access will be approximately 6 days and there is some concern as to whether the county owns the snow removal equipment required.

02/20/08	Leadville town meeting;
02/22/08	Remove old GAW Shaft pump;
02/25/08	EPA-BOR technical meeting re: LMDT plugging and pumping;
02/26/08	Clear snow from the GAW Shaft portal;
02/27/08	Deliver portable generator and temporary pump to the Shaft portal;
02/27/08	GAW Shaft temporary pump operation began at 11 AM MT.
03/03/08	Permanent pump and piping scheduled to arrive at GAW Shaft portal.
03/03/08	Installation of pump and electrical hook up commences.

2.2 Future Plans

At public meeting held in Leadville on February 20, 2008, EPA committed to 'dewatering' the LMDT behind the plug(s) so as to ameliorate the threat of a LMDT catastrophic release. Such actions will include:

- Installation of a 'dewatering well' and associated pipeline.

2.3 The On Scene Coordinator anticipates installation of a power drop and delivery of the permanent pump and necessary piping at the GAW Shaft portal the week of March 3, 2008.

2.4 Existing water quality data will be verified and/or updated.

2.5 Snow removal to allow access to location 46-06 of the LMDT will begin the week of March 3, 2008 and require approximately 6 days.

2.6 Finance

An initial Removal ceiling of \$250,000 has been authorized.

2.7 Issues

Key issues, other than those discussed above, have not been identified at this time.

3. Participating Entities

EPA

BOR

Colorado Department of Public Health and Environment (CDPHE)

Leadville

4. Personnel on Site

4.1 EPA

4.2 BOR

4.3 CDPHE

4.4 Leadville City Employees